



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/738,442	12/17/2003	James E. Winzeler	01-827	8230

719 7590 03/29/2006

CATERPILLAR INC.
100 N.E. ADAMS STREET
PATENT DEPT.
PEORIA, IL 616296490

EXAMINER

HO, HA DINH

ART UNIT	PAPER NUMBER
----------	--------------

3681

DATE MAILED: 03/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/738,442	Applicant(s) WINZELER, JAMES E.	
	Examiner Ha D. Ho	Art Unit 3681	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-15 and 17-20 is/are rejected.
- 7) ☒ Claim(s) 7 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is responsive to Applicant's Amendment filed on 01/09/06. Claims 1-20 are currently pending.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 4-6, 8, 10, 14-15 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Fisher (US 3,147,635).

Regarding claims 1 and 10, Fisher teaches a final drive assembly (see Fig. 2) for transmitting torque between an input 10 and an output 12, said final drive comprising: a compound gear assembly including at least three planetary gear trains (20, 22, 24) and being in driving engagement with the input, **each** planetary gear train of said at least three planetary gear trains being adapted to coactively and drivingly engage the output directly, wherein torque generated by the input is distributed to the output by said each of said planetary gear trains.

Regarding claim 4, wherein the input includes an internal combustion engine (col. 1, line 72).

Regarding claims 5 and 14, wherein the compound gear assembly includes an outboard gear train 24 drivingly engaged by the input 10.

Art Unit: 3681

Regarding claims 6 and 15, wherein the compound gear assembly comprises first 24, second 20 and third 22 planetary gear trains which each includes a sun gear (54, 34, 38), the sun gears (34, 38) of the second and third planetary gear trains are coaxially positioned.

Regarding claims 8 and 17, wherein said first planetary gear train 24 is adapted to be driven by the input and said third planetary gear train 22 includes a portion 36 thereof adapted to be grounded through a reaction member 46.

4. Claims 1-6, 8, 10-15, 17 and 19-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Furusawa (JP 56-39343). This reference can be found in the previous Office Action.

Regarding claims 1, 10 and 20, Furusawa teaches a final drive assembly (see Fig. 2) for transmitting torque between an input 3 and an output 11, said final drive comprising: a compound gear assembly including at least three planetary gear trains (there are three planetary gear units) and being in driving engagement with the input, each planetary gear train of said at least three planetary gear trains being adapted to coactively and drivingly engage the output directly, wherein torque generated by the input is distributed to the output by said each of said planetary gear trains.

Regarding claims 2 and 11, wherein the output consists of a wheel assembly (the drum 1) having a rim assembly (the rim of the drum 1), said at least three planetary gear trains are substantially enclosed by the rim assembly.

Regarding claims 3 and 12, wherein at least one of said at least three planetary gear trains is positioned inboard relative to said wheel assembly.

Regarding claims 4 and 13, wherein the input includes an electric drive motor, a hydraulic motor, an internal combustion engine and a hybrid source (see abstract).

Regarding claims 5, 14 and 20, wherein the compound gear assembly includes an outboard gear train (4, 5, 6) drivingly engaged directly by the input 3.

Regarding claims 6 and 15, wherein the compound gear assembly comprises first, second and third planetary gear trains which each includes a sun gear (4, 19, 14), the sun gears (19, 14) of the second and third planetary gear trains are coaxially positioned.

Regarding claims 8 and 17, wherein said first planetary gear train is adapted to be driven by the input and said third planetary gear train includes a portion 20 thereof adapted to be grounded through a reaction member 17.

Regarding claim 19, wherein said at least three planetary gear trains have approximately equal gear ratios (note all gears have approximately equal diameters).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2, 3, 9, 11-13 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher (US 3,147,635) in view of Dence (US 3,115,204).

Regarding claims 2, 3, 11 and 12, Fisher teaches the output shaft 12 being connected to the wheel assembly (col. 2, line 1). Fisher does not show the planetary gear trains (20, 22, 24) being enclosed by a rim assembly of the wheel assembly.

Dence shows a wheel assembly having a rim assembly 26, which encloses three planetary gear trains (44, 46, 48).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the wheel assembly of Fisher to have a rim assembly enclosing the three planetary gear trains in view of Dence in order to provide the wheel construction which is compact and rugged (col. 4, lines 8-10).

Regarding claim 9 and 18, Fisher does not specify a speed ratio between the input and the output is at least 49:1.

Dence shows a wheel assembly having a speed ratio between the input 18 and the output 30 is at least 49:1 (col. 3, lines 71-72).

It would have been an obvious matter of design choice to make the drive assembly of Fisher to have a speed ratio between the input and the output be at least 49:1 in view of Dence, since such a modification would have involved a mere change in the size of gear components. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955).

Regarding claim 13, Fisher shows the input including an engine, not an electric drive motor.

Dence shows the input 18 including an electric drive motor 12.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the engine of Fisher by the motor of Dence in order to reduce noise and pollution.

7. Claims 9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furusawa (JP 56-39343) in view of Dence (US 3,115,204).

Furusawa does not specify a speed ratio between the input and the output is at least 49:1.

Dence shows a wheel assembly that a speed ratio between the input 18 and the output 30 is at least 49:1 (col. 3, lines 71-72).

It would have been an obvious matter of design choice to make the drive assembly of Furusawa to have a speed ratio between the input and the output be at least 49:1 in view of Dence, since such a modification would have involved a mere change in the size of gear components. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955).

Allowable Subject Matter

8. Claims 7 and 16 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten or amended to overcome the objection(s) set forth in this Office action and rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. Applicant's arguments filed 01/09/06 have been fully considered but they are not persuasive.

10. Applicant argues that "The Office Action contends that Fisher discloses **three** planetary gear trains that are adapted to coactively and drivingly engage the output" (page 10, the second paragraph). Examiner disagrees because that is not what the Office Action contends. Note that the Office Action contends that Fisher discloses **each**, not **three**, planetary gear train of the at least three planetary gear trains being adapted to coactively and drivingly engage the output. It is clearly shown in Fig. 2 that **each** of the three planetary gear trains (20, 22, 24) is coactively and drivingly engaged with the output (12) via the carrier of each. Therefore, Fisher shows the claimed limitations.

11. Further, Applicant argues that "Dence does not disclose or suggest at least three planetary gear trains that are adapted to coactively and drivingly engage the output directly" (page 11, lines 3-5). Note that the Dence reference is used in 103 rejections, not 102, which shows a wheel assembly having a rim that encloses three planetary gear trains, wherein a speed ratio between the input and the output of the wheel assembly is at least 49:1. The combination of Fisher and Dence would have all the claimed features.

12. Finally, the newly added claim 20 is rejected as being anticipated by Furusawa.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Communication

14. Submission of your response by facsimile transmission is encouraged. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300. Recognizing the fact that reducing cycle time in the processing and examination of patent applications will effectively increase a patent's term, it is to your benefit to submit responses by facsimile transmission whenever permissible. Such submission will place the response directly in our examining group's hands and will eliminate Post Office processing and delivery time as well as the PTO's mail room processing and delivery time. For a complete list of correspondence not permitted by facsimile transmission, see M.P.E.P. 502.01. In general, most responses and/or amendments not requiring a fee, as well as those requiring a fee but charging such fee to a deposit account, can be submitted by facsimile transmission. Responses requiring a fee which applicant is paying by check should not be submitting by facsimile transmission separately from the check. Responses submitted by facsimile transmission should include a Certificate of Transmission (M.P.E.P.. 512). The following is an example of the format the certification might take:

I hereby certify that this correspondence is being facsimile transmitted to
the Patent and Trademark Office on _____

(Date)

Typed or printed name of person signing this certificate:

(Signature)

If your response is submitted by facsimile transmission, you are hereby reminded that the original should be retained as evidence of authenticity (37 CFR 1.4 and M.P.E.P.. 502.02).


Art Unit: 3681

Please do not separately mail the original or another copy unless required by the Patent and Trademark Office. Submission of the original response or a follow-up copy of the response after your response has been transmitted by facsimile will only cause further unnecessary delays in the processing of your application; duplicate responses where fees are charged to a deposit account may result in those fees being charged twice.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ha D. Ho whose telephone number is **571-272-7091**. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor can be reached on **571-272-7095**.

15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HDH
(571) 272-7091
March 23, 2006


HA HO
PRIMARY EXAMINER
Art Unit 3681 3/23/06